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EXAMINER	
REDDING, THOMAS M	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/821,792	PARISIS ET AL.	
	Examiner	Art Unit	
	THOMAS M. REDDING	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,10-12,16-22 and 26-28* is/are rejected.

7)☒ Claim(s) *4-9 and 13-15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 May 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's response received on 5/29/2008 is fully considered herein. Claims 1-28 are currently pending. This action is non-final as new rejections were applied to previously objected to claims with the discovery of new art.

Specification

2. In response to applicant's amendment of the abstract to remove the title, the objection to the abstract is withdrawn.

In response to applicant's amendment of the specification to correct the typographical error on page 18, the objection to that error is withdrawn.

In response to applicant's updated drawing, the objection regarding the inconsistency between the drawings and the specification is withdrawn.

Claim Objections

3. In response to applicant's amendment of claim1, removing the phrase "said components" on line 7, the objection to claim 1 is withdrawn.

The objections to claims 3, 9, and 25 are maintained. Applicant's remarks of 5/29/2008 indicated that claims 9 and 25 had been amended. Claims 3 and 25 are

included in the amended claims in their original form and do not show the described amendments.

The remarks regarding claim 3 do not appear consistent with the cited portion of the disclosure and are discussed further below in the Response to Arguments.

4. Claim 3 is objected to under 37 CFR 1.75(a), as failing to particularly point out and distinctly claim the subject matter which application regards as his invention or discovery.

Claim 3 recites “said vector to be marked is central vector, positioned between said reference vectors". This statement is problematic first as it is unclear how many dimensions each vector has. If 2 dimensional, the remainder of the claim would be sufficiently clear. If the vectors are 3 dimensional, as implied by the specification, then determining which vector falls between the other two is affected by the viewpoint of the observer. The specification indicates the reference vectors are determined as the two vectors separated by the greatest distance. The "central" vector is then determined to be the remaining vector. As no other methods have been disclosed, claim 3 may not be fixable with regards to a general description of the concept.

Correction is required.

5. Claims 9 and 25 are objected to because of the following informalities:

Claim 9 appears to have an incomplete edit. The word “any” at the end of the first line does not make sense in context.

Claim 25, line 2 recites "said mark is recuperated at least twice". Recuperated is an unusual choice of word in this context. Suggest changing the word to "recovered".

Appropriate correction is required.

Allowable Subject Matter

6. The indicated allowability of claims 10, 11 and 16 is withdrawn in view of the newly discovered reference to Hayashi et al. (US 6,535,616). Rejections based on the newly cited reference follow below in the 35 USC § 103 rejections in section 9.

The indicated allowability of claims 11 and 12 is withdrawn in view of the newly discovered reference to Moskowitz et al. (US 5,889,868). Rejections based on the newly cited reference follow below in the 35 USC § 103 rejection in section 10.

The indicated allowability of claim 25 is withdrawn in view of the newly discovered reference to Rhoads et al (US 2003/0174862). Rejections based on the newly cited reference follow below in the 35 USC § 103 rejection in section 11.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

> Nonfunctional descriptive material that does not constitute a statutory process, machine, manufacture or composition of matter and should be rejected under 35 U.S.C. Sec. 101. Certain types of descriptive material, such as music, literature, art, photographs and mere arrangements or compilations of facts or data, without any functional interrelationship is not a process, machine, manufacture or composition of matter. USPTO personnel should be prudent in applying the foregoing guidance. Nonfunctional descriptive material may be claimed in combination with other functional descriptive multi-media material on a computer-readable medium to provide the necessary functional and structural interrelationship to satisfy the requirements of 35 U.S.C. Sec. 101. The presence of the claimed nonfunctional descriptive material is not necessarily determinative of nonstatutory subject matter. For example, a computer that recognizes a particular grouping of musical notes read from memory and upon recognizing that particular sequence, causes another defined series of notes to be played, defines a functional interrelationship among that data and the computing processes performed when utilizing that data, and as such is statutory because it implements a statutory process.

Claim 21 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 21 recites a watermarked color image on a computer-readable medium which does not impart functionality to a computer or computing device, and is thus considered nonfunctional descriptive material. Such nonfunctional descriptive material, in the absence of a functional interrelationship with a computer, does not constitute a statutory process, machine, manufacture or composition of matter and is thus non-statutory per se. Non-functional descriptive is non-statutory regardless of whether it is claimed as residing on a computer readable medium.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 21 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. At no place in the specification is there a description of a watermarked color image being stored on a computer-readable medium.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-3, 18-22, 26 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Reed et al. (US 2002/0067844).

Regarding claims 1, 19, 20 and 21 Reed working in the same field of endeavor of watermarking color images (“FIG. 3b illustrates the color data of FIG. 3a, embedded with a digital watermark signal”, Reed, paragraph 17) discloses a [m]ethod of watermarking a color image that has at least three components, characterized in that it comprises an insertion step of a mark of watermarking, on at least one point of the image, according to an insertion rule taking into account the relative position of at least three component vectors, associated to said at least one point (“Typically, a watermark signal has at least one component, which when embedded in the media corresponds to (or affects) various areas (or pixels) in the media”, Reed, paragraph 59, Reed’s method adjusts pixels in a variety of places in the image, and " a class of watermarking schemes can be modeled as an array of changes to luminance values of a host image. The host image comprises an array of color vectors (e.g., an array of color such as RGB, CMY, CMYK, etc). The image sample maybe represented as a vector between black and the pixel color value", Reed, paragraph 50, and figures 1 and 2. Reed uses a minimum of 3 color components).

Further regarding claim 19, Reed discloses a [d]evice for watermarking a color image that implements the elements in common with claim 1 (“Such software may be stored and executed on a general purpose computer, or on a server for distributed use”, Reed, paragraph 111, Reed teaches his system can be implemented on a computer).

Further regarding claim 20, Reed discloses a [c]omputer-readable storage medium comprising program code instructions that can be used in a computer to watermark a color image that implements the elements in common with claim 1 ("The above-described methods and functionality can be facilitated with computer executable software stored on computer readable media, such as electronic memory circuits, RAM, ROM, magnetic media, optical media, memory sticks, hard disks, removable media, etc., etc.", Reed, paragraph 111).

Further regarding claim 21, Reed discloses a [c]omputer readable storage medium comprising a color image having at least three components and comprising a watermarking as described by elements in common with claim 1 ("Media is embedded with a watermark signal. Of course, the media may correspond to a digital image or photograph, video frame, graphic, picture, etc., and in some cases, may even include a physical object such as a picture, graphic, image, photograph, graphic, logo, product tag, business card, art work, document, product packaging, trading card, banknote, deed, document, poster, ID card, postage stamp, etc., etc.", Reed, paragraph 59).

Regarding claim 2, Reed discloses a [m]ethod of watermarking set forth in claim 1, characterized in that for each of said related points, two vectors are selected as reference vectors and one vector to be marked in order to bear said mark of watermarking ("a class of watermarking schemes can be modeled as an array of changes to luminance values of a host image", Reed, paragraph 50, and "Luminance,

color component "a" and color component "b" (Lab), can be combined to uniquely identify a particular color", Reed, paragraph 55, Reed teaches encoding a watermark in Luminance, and if the Lab color space is used, the watermark signal would be encoded in the luminance axis, "By using the scale to white method for colors with high yellow content such as yellow, red and green, and scale to black for blue, cyan and magenta a lower visibility watermark can be encoded with the same detectability", Reed, paragraph 52, Reed teaches adjusting luminance in reference to the original color).

Regarding claim 3, Reed teaches a [m]ethod of watermarking set forth in claim 2, characterized in that said vector to be marked is a central vector, positioned between said reference vectors ("The host image comprises an array of color vectors (e.g., an array of color such as RGB, CMY, CMYK, etc). The image sample maybe represented as a vector between black and the pixel color value", Reed, paragraph 50, Reed teaches adjusting the luminance component, if the Lab color plot is viewed with the ab plane on the horizontal, and sighting down the a=b line toward the origin, the luminance vector will appear between the two color vectors).

Regarding claim 18, Reed teaches a [M]ethod of watermarking set forth in claim 1, characterized in that said components belong to the group comprising:

- the RGB components;

- the YUV components;

- the CMY components (“The host image comprises an array of color vectors (e.g., an array of color such as RGB, CMY, CMYK, etc). The image sample maybe represented as a vector between black and the pixel color value", Reed, paragraph 50).

Regarding claim 22, Reed discloses a [m]ethod for detecting a watermarking in a marked watermarking, performed according to claim 1, characterized in that it comprises a recovering step of a mark of watermarking, in at least one point of the image, according to a recovering rule taking into account the relative position of the at least three component vectors, associated to said at least one point (“The step S11 subtraction operates to help reduce image content, and to reinforce the watermark signal by effectively adding the K watermark signal value to the CMY watermark signal, since the K watermark signal is the inverse of the CMY channel signals”, Reed, paragraph 67, Part of Reeds detection method involves reinforcing the watermark signal).

Regarding claim 26, Reed teaches a [d]evice for detecting a watermarking in a watermarked image (“The media is illuminated with an infrared illumination source, and a digital camera captures an image of the media. Preferably, the camera includes an IR-pass filter with characteristics as shown in FIG. 15. The digital camera communicates with a computing device, which detects and decodes an out-of-phase digital watermark embedded in the media.”, Reed, paragraph 77), performed according to claim 1,

characterized in that it comprises means of recovering a mark of watermarking, in at least one point of the image, according to a recovering rule taking into account the relative position of at least three component vectors, associated to said at least one point (“Typically, a watermark signal has at least one component, which when embedded in the media corresponds to (or affects) various areas (or pixels) in the media”, Reed, paragraph 59, Reed’s method adjusts pixels in a variety of places in the image, and " a class of watermarking schemes can be modeled as an array of changes to luminance values of a host image. The host image comprises an array of color vectors (e.g., an array of color such as RGB, CMY, CMYK, etc). The image sample maybe represented as a vector between black and the pixel color value", Reed, paragraph 50, and figures 1 and 2. Reed uses a minimum of 3 color components).

Regarding claim 27, Reed teaches a [c]omputer-readable medium comprising program code instructions saved on a support that can be used in a computer to detect a watermarking in a watermarked image, performed according to claim 1, characterized in that said program comprises means of programming that are readable by a computer in order to carry out a recovering step of a mark of watermarking (“The captured image is communicated to computer 14. Preferably, computer 14 includes executable software instructions to detect and decode the digital watermark embedded within media 1. The software instruction can be stored in memory or electronic memory circuits. Of course, computer 14 can be a handheld computer, a laptop, a general-purpose computer, a workstation, etc”, Reed, paragraph 72),

in at least one point of the image, according to a recovering rule taking into account the relative position of at least three component vectors, associated to said at least one point ("Typically, a watermark signal has at least one component, which when embedded in the media corresponds to (or affects) various areas (or pixels) in the media", Reed, paragraph 59, Reed's method adjusts pixels in a variety of places in the image, and " a class of watermarking schemes can be modeled as an array of changes to luminance values of a host image. The host image comprises an array of color vectors (e.g., an array of color such as RGB, CMY, CMYK, etc). The image sample maybe represented as a vector between black and the pixel color value", Reed, paragraph 50, and figures 1 and 2. Reed uses a minimum of 3 color components).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reed et al. (US 2002/0067844) in combination with Alattar, "'Smart Images' Using Digimarc's Watermarking technology").

Regarding claim 17, Reed teaches a [m]ethod of watermarking set forth in claim 1. Reed does not teach that said mark is a pseudo-random binary signature written in a redundant manner.

Alattar, working in same area of endeavor of Digital Watermarking in images, does teach said mark is a pseudo-random binary signature written in a redundant manner ("Also, let K.(n) {k ,k k. ,k, } be a set of L pseudo-random binary keys, where k = {—1,1} and .J x L = Nx M. Each of these keys is associated with one of the bits in the error-protected watermark, W(n). These random keys are first used to spread each of the bits of the watermark signal, W(n), to produce ((n), which is a vector of length J", Alattar, page 267, paragraph 1).

It would have been obvious at the time the invention was made for one of ordinary skill in the art to use the Pseudo-random binary keys of Alattar in the watermarking system of Reed to "make the signal imperceptible and to combat the effect of image manipulation and filtering" (Alattar, page 267, paragraph 1).

13. Claims 10, 16 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reed et al. (US 2002/0067844) in combination with Hayashi et al. (US 6,535,616).

Regarding claim 10, Reed teaches all the elements of claim 1 as given above.

Reed does not teach that it also comprises a transformation step into wavelets of each of said components of the image, and in that said at least three component vectors are set, for each point of at least one level of decomposition of said transformation into wavelets, for each of said components respectively.

Hayashi working in the same field of endeavor of digital watermarking does teach a transformation step into wavelets of each of said components of the image, and in that said at least three component vectors are set, for each point of at least one level of decomposition of said transformation into wavelets, for each of said components respectively ("to apply orthogonal transformation such as discrete cosine transformation or wavelet transformation to the luminance signal component Y and the color difference signal components Cr, Cb", Hayashi, column 22, line 14 and figure 13, watermarking is done with the wavelet signals).

It would have been obvious at the time the invention was made for one of ordinary skill in the art to use the wavelet encoding of the color channels as taught by Hayashi in the watermarking system of Reed to embed the watermark in the frequency area of the image. A well known technique (Hayashi, column 1, line 36, and "Therefore, in order to minimize the influence on the original image signal in embedding the digital watermark information into the image data, it is conceivable to execute such embedding into the coefficient information contained in the higher sub bands", Hayashi, column 6, line 7).

Regarding claim 16, the combination of Reed and Hayashi teaches after said step of associating a mark of watermarking, a transformation step into inverse wavelets, issuing a marked image (Hayashi, figure 13, reference 1304 – inverse image converting unit).

Regarding claim 28, the combination of Reed and Hayashi teaches a [m]ethod of watermarking a color image that has at least three components, wherein the method comprises:

an insertion step of a mark of watermarking, on at least one point of the image, according to an insertion rule taking into account the relative position of three component vectors associated to said at least one point ("Typically, a watermark signal has at least one component, which when embedded in the media corresponds to (or affects) various areas (or pixels) in the media", Reed, paragraph 59, Reed's method adjusts pixels in a variety of places in the image, and " a class of watermarking schemes can be modeled as an array of changes to luminance values of a host image. The host image comprises an array of color vectors (e.g., an array of color such as RGB, CMY, CMYK, etc). The image sample maybe represented as a vector between black and the pixel color value", Reed, paragraph 50, and figures 1 and 2. Reed uses a minimum of 3 color components), and

a transformation step into wavelets of each of said components of the image, and wherein said at least three component vectors are set, for each point of at least one level of decomposition of said transformation into wavelets, for each of said components

respectively ("to apply orthogonal transformation such as discrete cosine transformation or wavelet transformation to the luminance signal component Y and the color difference signal components Cr, Cb", Hayashi, column 22, line 14 and figure 13, watermarking is done with the wavelet signals).

14. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reed et al. (US 2002/0067844) in combination with Moskowitz et al. (US 5,889,868).

Regarding claim 11, Reed discloses all the elements of claim 1 as give above.

Reed does not teach at least two marking agreements for a vector are provided.

Moskowitz, working in the same field of endeavor of digital watermarking does teach at least two marking agreements for a vector are provided ("adjusting the quantization level of the sample window to correspond to the message bit when a bit conflicts with the quantization level and de-normalizing the analyzed samples", Moskowitz, column 3, line 6, Moskowitz chooses among at least two coding alternatives, either with an adjusted coding level or without).

It would have been obvious at the time the invention was made for one of ordinary skill in the art to use the signal adjustment method taught by Moskowitz with the digital watermarking system of Reed to avoid conflicts with the quantization levels (Moskowitz, column 3, line 8).

Regarding claim 12, the combination of Reed and Moskowitz teaches the marking agreement for a given image chosen is the one limiting the risk of conflicts at the time of detecting said mark ("adjusting the quantization level of the sample window to correspond to the message bit when a bit conflicts with the quantization level and de-normalizing the analyzed samples", Moskowitz, column 3, line 6).

15. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reed et al. (US 2002/0067844) in combination with Rhoads et al. (US 2003/0174862).

Regarding claim 25, Reed teaches all the elements of claim 22 as given above.

Reed does not clearly disclose that the mark is recuperated at least twice, and in that a correlation calculation is implemented with regard to a reference signature, in order to decide whether the watermarking is or is not correctly detected.

Rhoads, working in the same field of endeavor of digital watermarking, does teach that the mark is recuperated at least twice ("The detection process may repeat, iteratively refining candidates by adjusting their orientation parameters", Rhoads, paragraph 32), and in that a correlation calculation is implemented with regard to a reference signature ("Another way to evaluate the presence of a signature in the suspect signal is to perform correlation between signal attributes of the one or more expected symbols and the suspect signal", Rhoads, paragraph 36), in order to decide whether the watermarking is or is not correctly detected ("Based on the detection value,

the detector may reject the signal as being un-marked (308). For example, if the detection value falls below a limit (either predetermined or adapted based on the suspect signal), then the detector may conclude that the associated signal is unmarked", Rhoads, paragraph 37).

It would have been obvious at the time the invention was made for one of ordinary skill in the art to combine the watermark evaluation techniques taught by Rhoads in the digital watermarking system of Reed "to determine whether the suspect signal is authentic or to control use of the suspect signal (e.g., enable/prevent its transmission, playback, recording or copying)" (Rhoads, paragraph 38).

Response to Arguments

Summary of Applicant's Remarks: Claim 3 refers to 2D vectors as illustrated in figure 5 and described on pages 29-30, and thus claim 3 is clear and needs no amendment.

Examiner's Response: From pages 29-30 in the disclosure, it is apparent that the vectors describe the color of pixels at 2D coordinates (e.g. Va(x,y)). The vectors themselves are in the color space and are at least three dimensional. So the original lack of clarity in the claim language remains. Claim 4 avoids the problem by actually describing the procedure disclosed.

Summary of Applicant's Remarks: The 101 rejection of claim 21 is improper as claim 21 is drawn to functional descriptive material on a computer-readable medium as amended.

Examiner's Response: Claim 21 still basically claims a color image, now amended to be stored on a computer readable medium. The fact that the image contains a watermark, does not make it functional descriptive material. A computer could not read the image and execute the information in the image. It is not equivalent to computer code on a computer-readable storage medium. Claim 21 remains non-statutory.

Summary of Applicant's Remarks: Regarding the 102(e) rejection of claim 1 and the claims depending from claim 1, the Reed reference does not teach taking into account the relative position of at least three component vectors.

Examiner's Response: Reed discloses adjusting luminance values ("To encode a watermark, the luminance of the image sample may be increased or decreased as shown in FIG. 1", Reed paragraph 50). To adjust luminance in the color space Reed is working in requires scaling each of the component color vectors ("Once the color vector entries are established, each of the entries is associated with a set of scale factors. The set includes a scale factor for each color component. The specific color components in the implementation depend on the color format of the image. For example, images in an RGB format have scale factors for each of the R, G and B color components. Similarly, images in a CMY format have scale factors for each of the C, M and Y components of

each table entry. The scale factors for each entry are derived by rewriting the above mathematical expression and solving for each color's scale factor as a function of the known color component values", Reed paragraph 53). As each of the component vectors are being adjusted, their relative positions are be affected and come into consideration.

Summary of Applicant's Remarks: Regarding claim 17, the combination of Reed and Alattar does not teach a mark that is a pseudo-random binary signature written in a redundant manner. Alattar teaches a binary key obtained in a pseudo-random manner.

Examiner's Response: Alattar teaches random keys ("let K.(n) {k ,k k. ,k, } be a set of L pseudo-random binary keys", page 267 paragraph 1), that are used to produce variations in the signature stored in vector C. The watermark is written to each NxM block in the image ("Then the watermark is independently embedded in each of these blocks", page 267, paragraph 1). The watermark is redundantly written. The key is a pseudo-random element used to modulate the watermark, making the applied watermark pseudo-random.

Allowable Subject Matter

16. Claims 4-9, 13-15 and 23-24 are objected to as being dependent upon rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the respective base claims and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter in the claims listed above:

Regarding claims 4 as well as claims 5-9, 14 and 15 which depend therefrom, and claim 23 as well as claim 24 which depends therefrom, the prior art of record does not teach selecting reference vectors by calculating the distance between any two vectors of at least three vectors and defining reference vectors as the two vectors furthest away from each other.

Regarding claim 13, the prior art of record does not teach providing two marking agreements for a vector where one is determined by the number of reference vectors for each component in the image.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THOMAS M. REDDING whose telephone number is (571)270-1579. The examiner can normally be reached on Mon - Fri 7:30 am - 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/T. M. R./
Examiner, Art Unit 2624

/Vikkram Bali/
Supervisory Patent Examiner, Art Unit 2624